

IV. REMARKS

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph. The claims are amended to obviate the rejection. Withdrawal of the rejection is respectfully requested.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as unpatentable over Philip Anthony Voaden (EP 0392674) in view of the Sado et al. (U.S. Patent No. 4,971,748). The rejection is respectfully traversed.

Voaden teaches a process for the production of a shaped sheet of polyimide. A sheet of polyimide to be shaped is placed on a shaped surface of a die. The sheet edges are sealed to the die. A vacuum is applied between the die surface and the sheet to draw the sheet into contact with the shaped die surface to impart the required shape to the sheet. The die and the sheet are placed in a gas containing autoclave while the vacuum is maintained. The temperature is raised in a range of 150 degrees to 250 degrees Celsius depending upon the thickness of the sheet. The pressure in the autoclave is raised to a pressure in a range of 5 to 15 bars depending upon the sheet thickness and the selected temperature. The selected temperature and pressure are maintained in the autoclave for 3 to 15 minutes. The selected temperature in the autoclave is reduced to a temperature in a range of 25 degrees to 125 degrees Celsius while the selected pressure is maintained. Thereafter, the pressure is reduced in the autoclave to ambient pressure. The shaped sheet and the die are removed from the autoclave and the shaped sheet is removed from the die.

Sado teaches a method for producing a three-dimensionally shaped aromatic imide polymer sheet article. The steps of the method include shaping the aromatic imide polymer sheet having a second order transition temperature of 250 degrees Celsius to 400 degrees Celsius and an ultimate elongation of 120% or more at 100 degrees Celsius by press-stretching at least a portion of the sheet at a temperature of 100 degrees Celsius or more but not exceeding a temperature of 100 degrees Celsius higher than the second order transition temperature of the sheet. The sheet is press-stretched to a desired three-dimensional convex or concave form protruding from the sheet. The resultant shaped sheet article is heat-set in its shaped form at a

temperature equal to or higher than the second order transition temperature of the sheet. The heat-set sheet article is then cooled to a desired low temperature.

Claim 1 is directed to a method of manufacturing an open polyimide molding product that includes the steps of bringing a polyimide film into an intimate contact with a molding die having a concave molding surface so as to tightly close the open end thereof, bending to form the polyimide film under contactless heating only by a pressure difference of gas, and simultaneously depressurizing a space on the side of the molding die and pressurizing a space on the opposite side relative to the polyimide film for providing the pressure difference at least in a final stage of the bending deformation thereby bringing the film into an intimate contact with the concave molding surface.

It is respectfully submitted that none of the applied art, alone or in combination, teaches or suggests the features of claim 1. Specifically, it is respectfully submitted that the applied art fails to teach simultaneously depressurizing a space on the side of the molding die and pressurizing a space on the opposite side relative to the polyimide film for providing the pressure difference at least in a final stage of the bending deformation thereby bringing the film into an intimate contact with the concave molding surface. Thus, it is respectfully submitted that one of ordinary skill in the art would not be motivated to combine the features of the applied art because such combination would not result in the claimed invention. As a result, it is respectfully submitted that claim 1 is allowable over the applied art.

Furthermore, the claim 1 invention and the invention of Anthony are distinguished from each other in respect of the following:

According to the present invention, with a view to suppressing generation of, for example, creases in the polyimide film, the process up to the stage at which the polyimide film is closely attached to the molding die is specifically defined. In contrast to this, according to Anthony, it is aimed at to achieve substantially permanent deformation of polyimide film which is hardly deformable. First, it has to be that the polyimide film is first closely attached to the die under vacuum and thereafter it is transferred into an autoclave and therein subject to a permanent deformation (namely, two processing steps are required). In addition, specifically defined are the temperature

and the pressure for the heating and pressurizing treatment indispensable for the imparting of the permanent deformation.

Thus, with respect to the object and the constitution of the invention, Applicant's claim 1 invention and the invention of Anthony completely differ from each other and Anthony is devoid of a hint for the achievement of the claim 1 invention.

Claims 2-12 depend from claim 1 and include all of the features of claim 1. It is respectfully submitted that the dependent claims are allowable at least for the reasons the independent claim is allowable as well as for the features they recite. For instance, claim 2 recites a pressing die is disposed to the open end of the molding die so as to seize the polyimide film and the polyimide film is heated in a contactless manner by disposing a heating portion to the pressing die and/or the molding die thereby radiating radiation heat and/or releasing a heating gas from the pressing die. Claim 3 recites that a porous metal is disposed to the concave molding surface of the molding die. Claim 8 recites that the molding section comprises a molding die having a concave molding surface and a pressing die in press contact with an open end of the molding die. For these additional reasons, it is respectfully submitted that claims 2, 3 and 8 are allowable over the applied art.

Withdrawal of the rejection is respectfully requested.

Newly-added claim 13 also includes features not shown in the applied art.

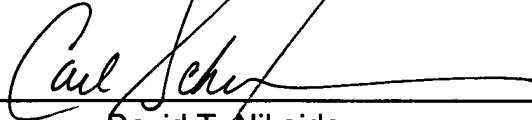
In view of the foregoing, reconsideration of the application and allowance of the pending claims are respectfully requested. Should the Examiner believe anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' representative at the telephone number listed below.

Should additional fees be necessary in connection with the filing of this paper or if a Petition for Extension of Time is required for timely acceptance of the same, the Commissioner is hereby authorized to charge Deposit Account No. 18-0013 for any such fees and Applicant(s) hereby petition for such extension of time.

Respectfully submitted,

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